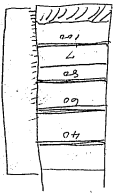
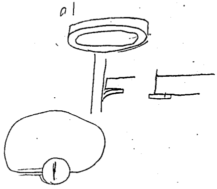
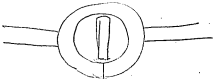
Notebook, N-88-10-01

This notebook covers the period October 1888-January 1889. It was used by Edison for drawings relating to dynamos, electric power distribution, and lamp vacuum experiments. Also included are notes and drawings pertaining to phonograph, typewriter, and ore milling caveats. At the end of the book is a table of chemicals and suppliers and a series of calculations. Inserted into the book is a 2-page note from Edison to experimenter James W. Gladstone regarding phonograph cylinders. The pages are unnumbered. Approximately 70 pages have been used.


100
7
80
60
40

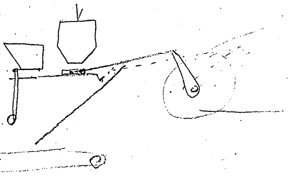


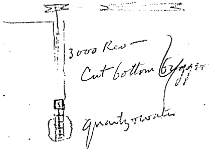


No1

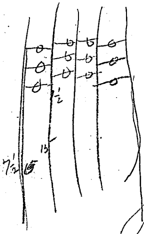
Slamp mill principle

No2 Chain principle



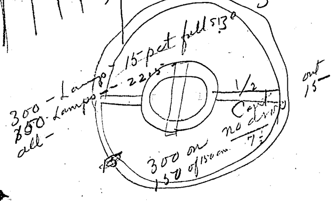

3000 Rev
Cut bottom Eggers
quartz & water

XE-172 N-88-10-01

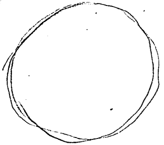


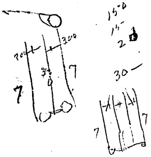
15 00
7,3-0
22 5-0

2250
750
3000,

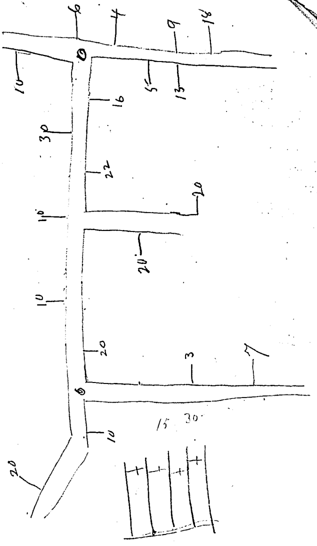


300 - Lamps - 15 pct full 5130
300 Lamps - 2215
all -
1/2
Capt
no drivg
7½
300 on
150 of 150 on
out
15





15-0
1½
2
300
700
3½
7
7
30
7
7

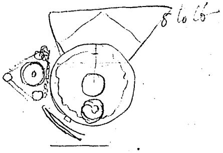


6
4
9
18
10
16
5
13
30
22
20
10
20
10
20
3
7
10
15 30
20

8) 619 (77, lbs
56
59
56
3

190) 1728 (81. lb
1520
208

177)



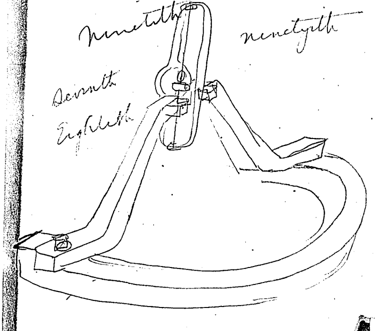
619
60 —
37,140

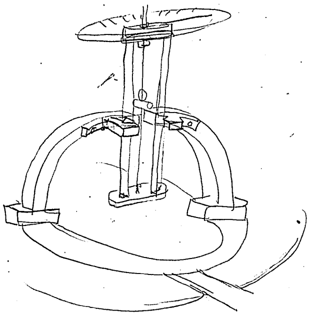
2 ton per hour per Pan
350.
177.
2450
2450
350
619,50

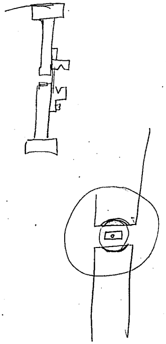
77.
60
4620 —

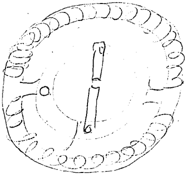
.15
.15
.75
15
2.25
79
2025
1575
177,75

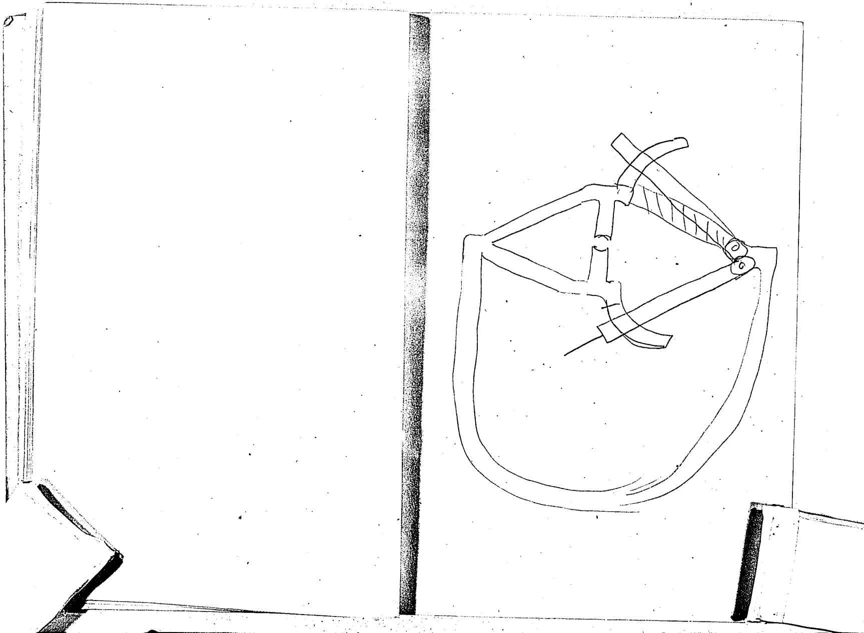
— 177

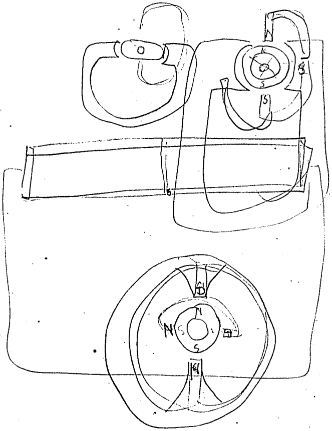

Nineteenth
ninetyith
Seventh
Eighteenth

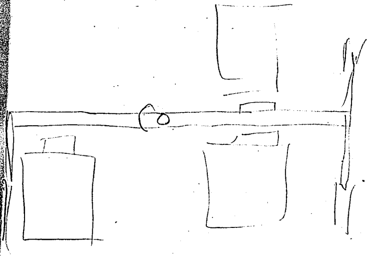


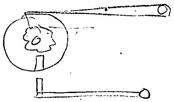


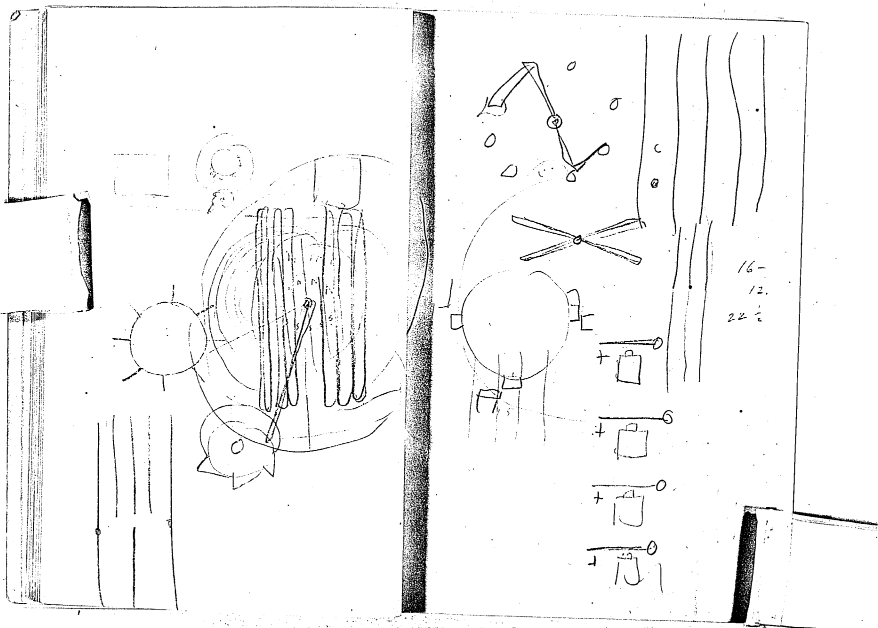


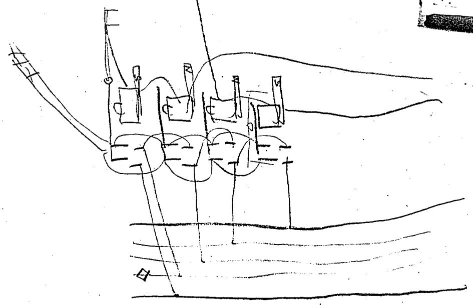


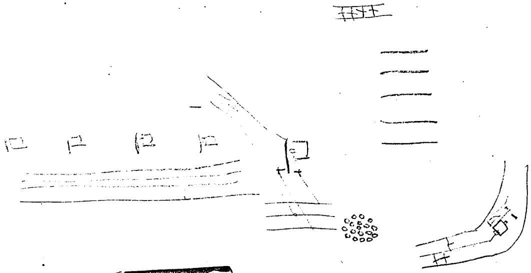

O
N
N
S
S
S
N
N
S
S

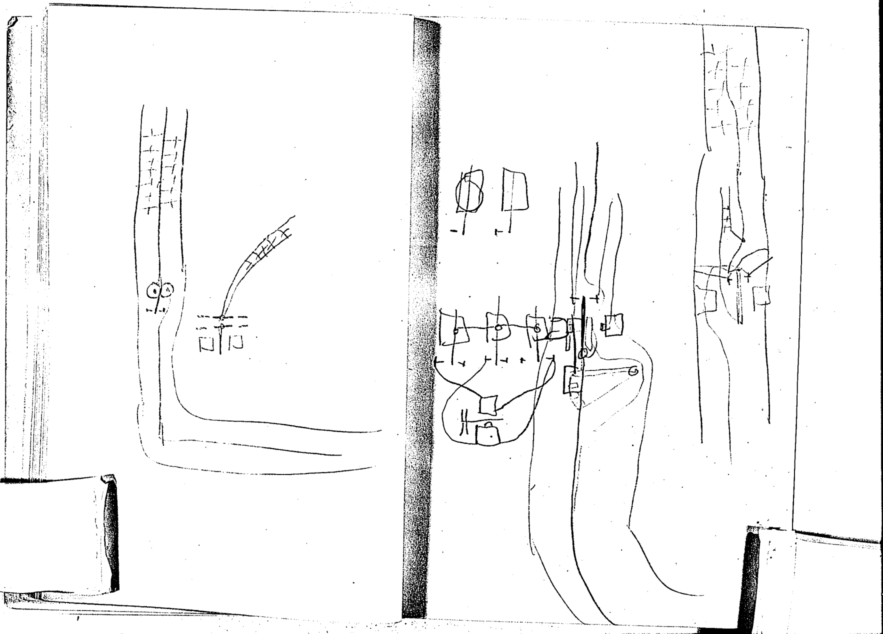


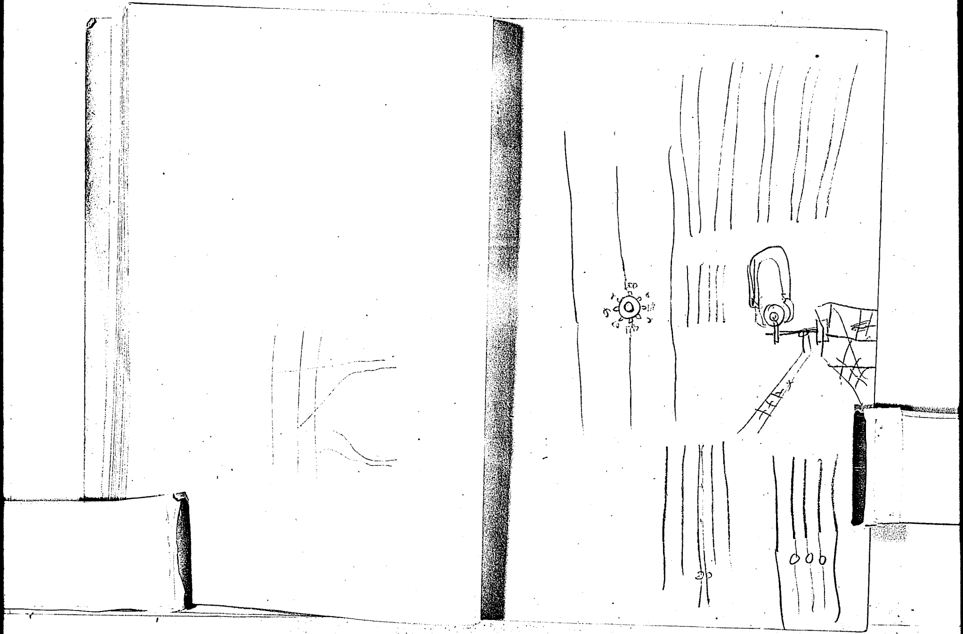


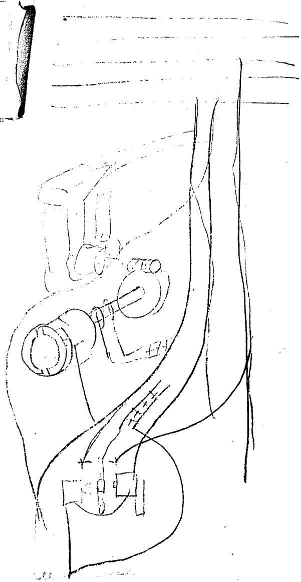

16 –
12.
22 ½

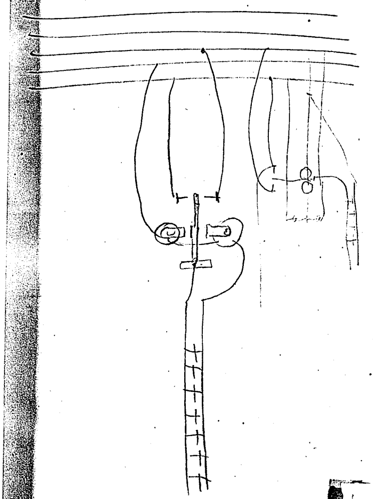


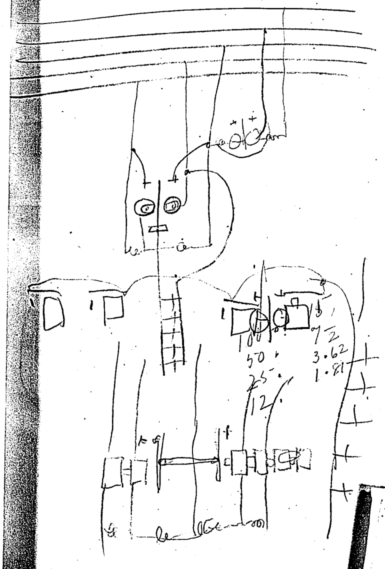




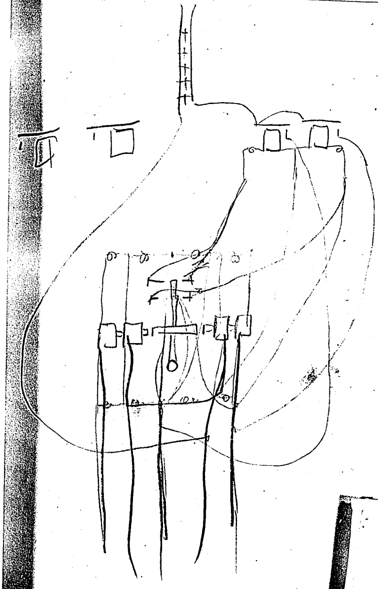


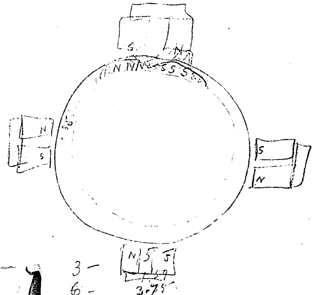






100
50
25
12
3.62
1.81




S
N
N N N
S S S
S
N
S
S
N
N
S
S

3 —
6 —
2

3.75
3

4/375
.93
2,8 2
2
4
5,6

6.3
3.2
2
9.5

6.6

3
3
3
9.9

9.9

100 —
37 — 3 mi.
~~7~~9.6 —
16.1 — 9

9

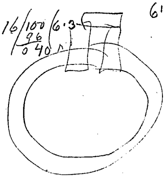
9/100
9.9

613

99
4
39.6

0

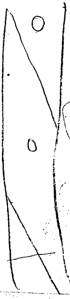
16/100 (6.3
96
0 40



6.3
3.2
5
16.0
25

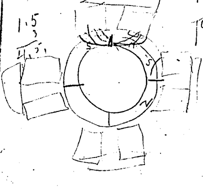
9.9
2
19.5

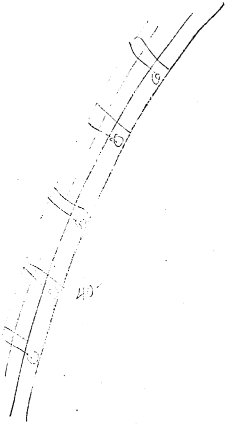
9.9
4.9
4
19.6

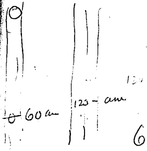


6
36.

1.5
3
4.5






60 am
120 – am
120-

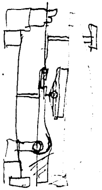
60 A 60 amp
120 B. 120 amps

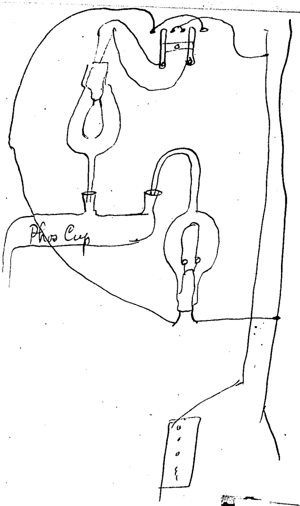
120-

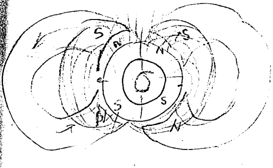
120-

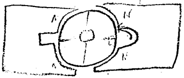
100 – 100 1
200 . 200 · 1/2

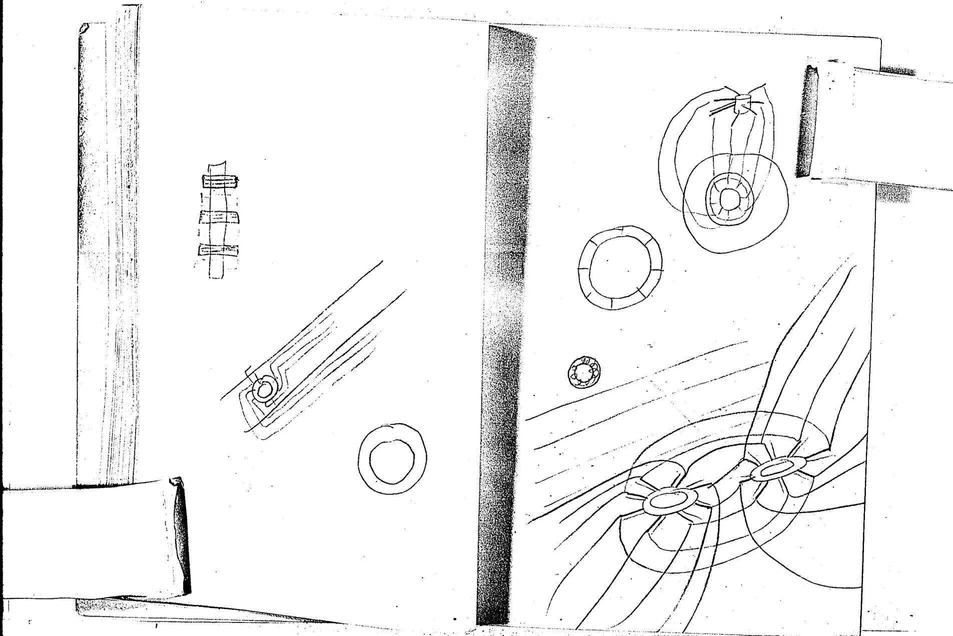
120-

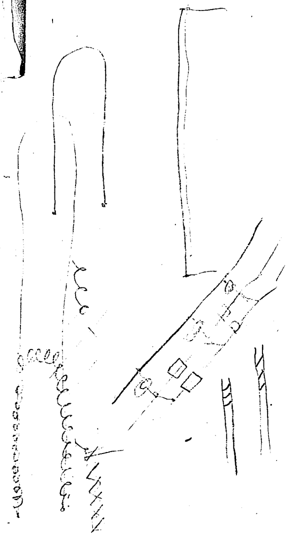


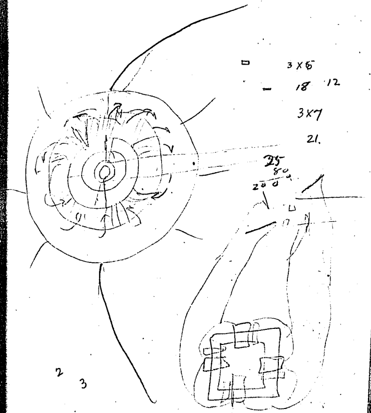

Phos Cup


S
N
N
S
S
S
N

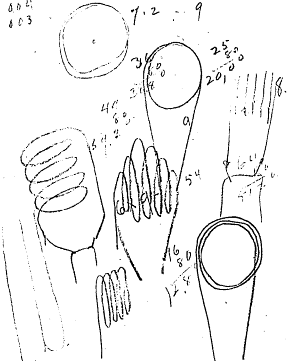

N
N

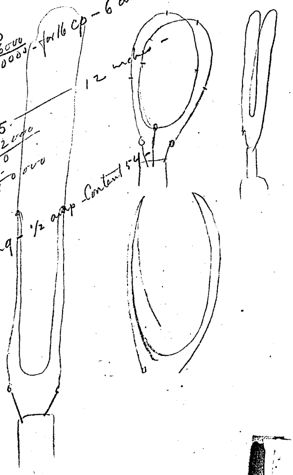


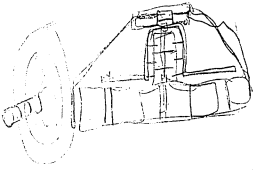


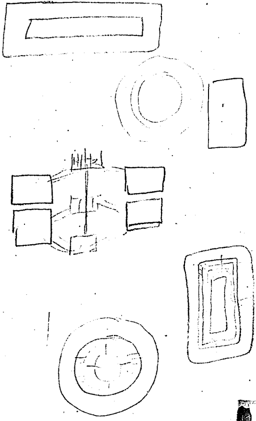

3×6
18
12
3×7
21.
25
80
200
2
3

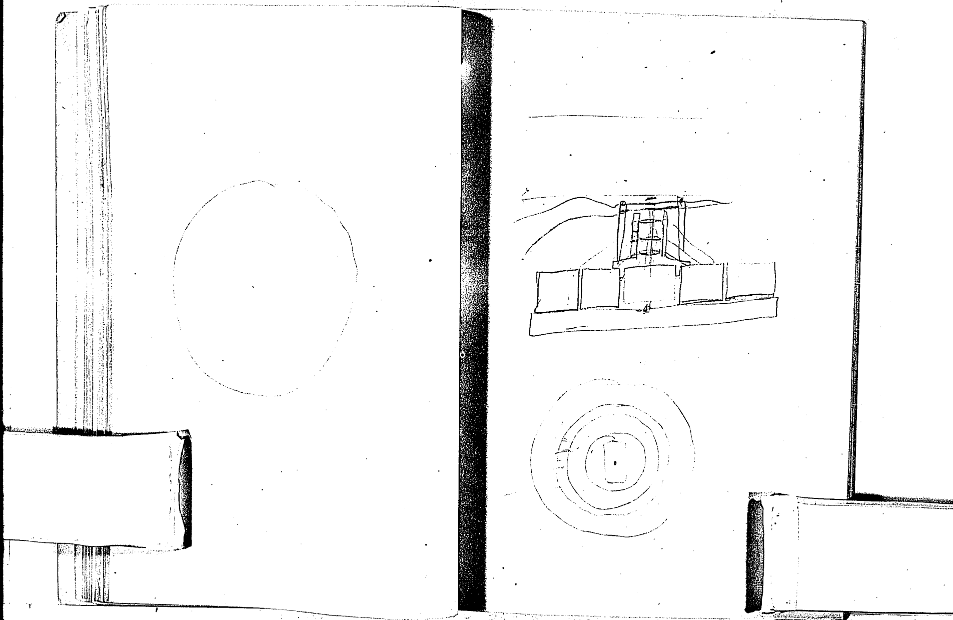
	Content	Surface	
008 Round	51.2	24	
	54	30	— Reg
6x9	39.2	21	
007	28.80	18	
006	20	15	
005	12.8	12	
004	7.2	9	
003			

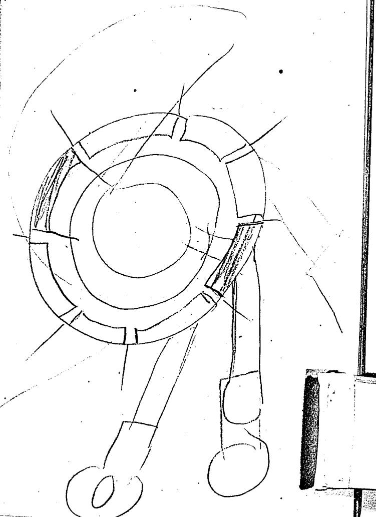

36
600
360
25
80
200
201
8.
40
80
54.2
9
54
64"
16
80
12.8

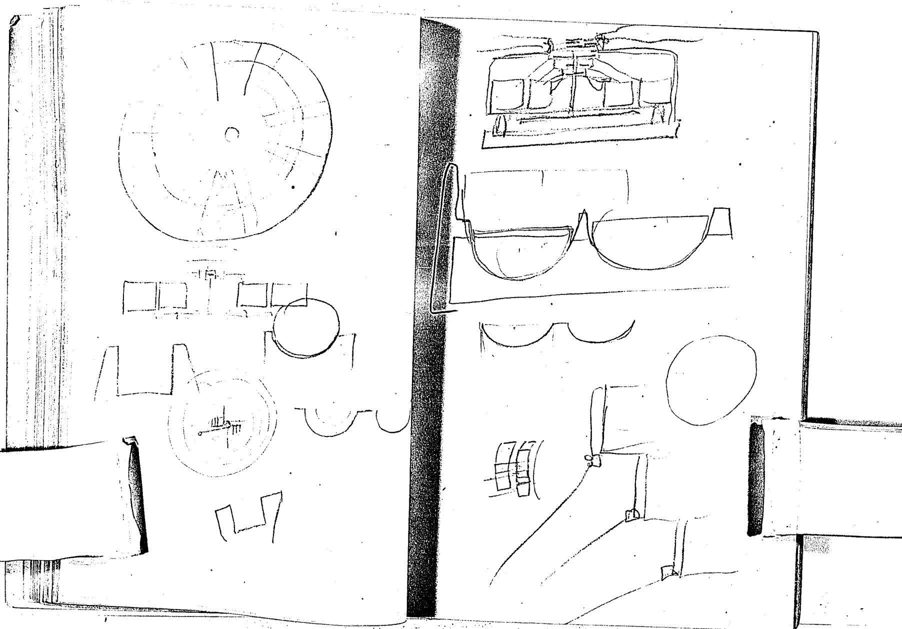

30
6000
80000 - for 16 cp - 6 inches
12 inches
15
12000
30
15
18 0 000
6x9 } 1/2 a[illegible]p - Content 54

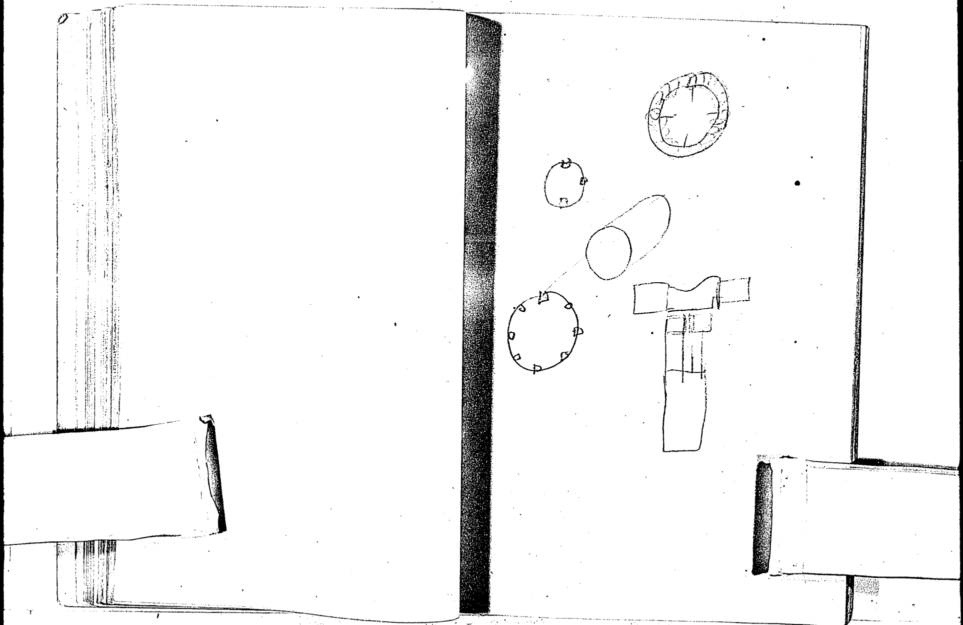


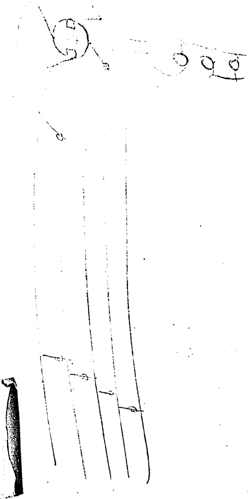


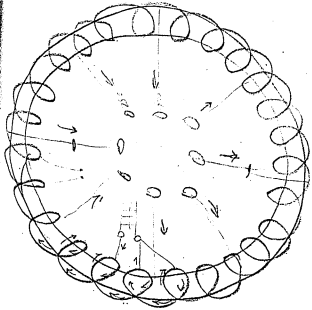


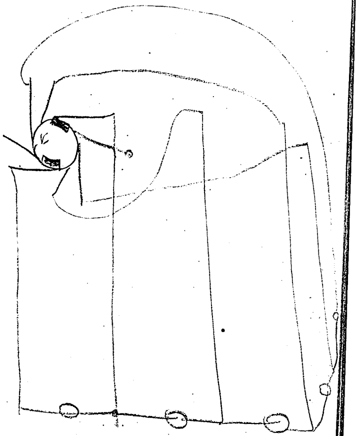


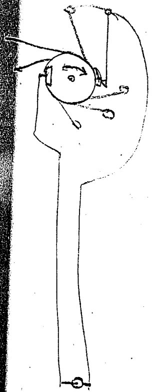


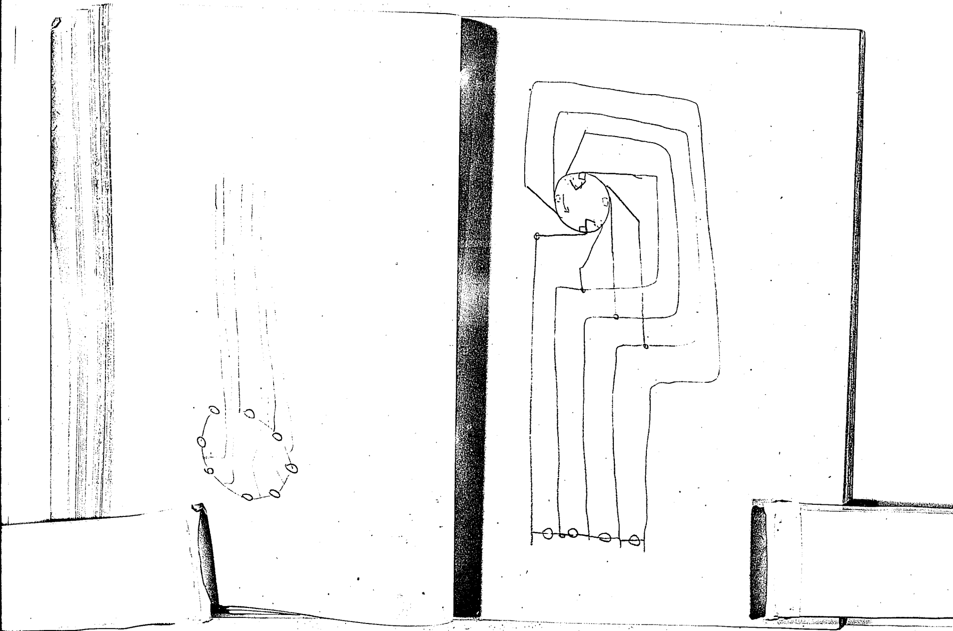




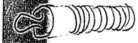






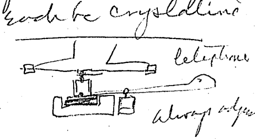


2nd Large phonogh Caveat
Oct 1 1888
TAE



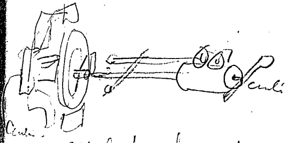
wound with thread, twine wire - flat or round Cloth in strip + then put in Mould + Cylinder poured -

A Recording Cylinder Composed of Several hard materials so Whole will be amorphous although the several ingredients may each be crystaline

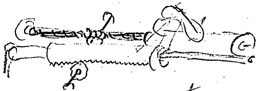


2nd Phono Caveat

Oct 1 1888 TAE



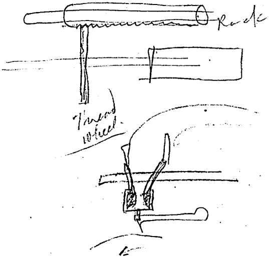
Motor direct — also gramme principle

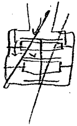


new motion

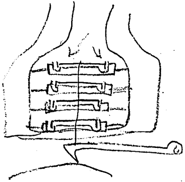
Mo'phone Caveat

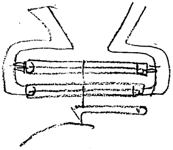
Octr 88 TAE

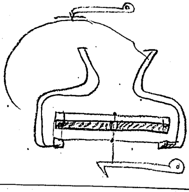

Rack
Thread wheel



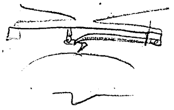
2nd phono Caveat Oct 1 88

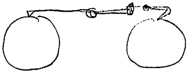




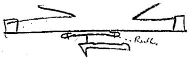


2nd phono Cov Oct 1 88 tak



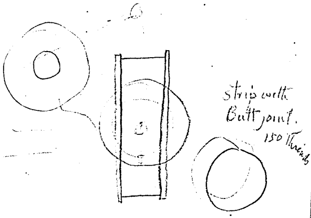


in reproduc to make
wave abrupt at end

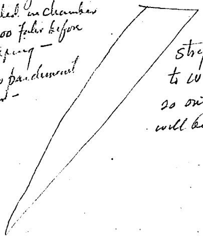


glass - closed chamber

2nd phono Caveat Oct 1 1888 TAE

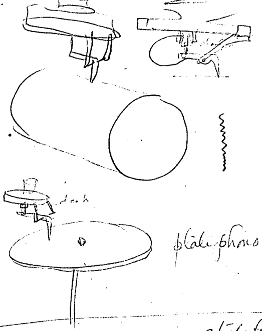

strip with
Butt joint.
150 Threads

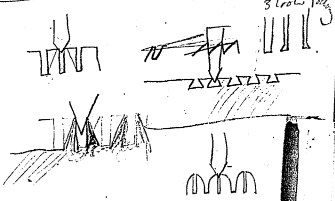
paper cylinders
Heated in chamber
to 300 fahr before
dipping —
also parchment
paper —

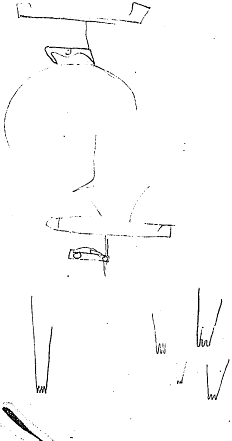


strip paper cut
to wind on $\frac{1}{32}$ taper
so outer surface
will be true —

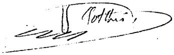
2nd phono Caveat Oct 1 88 [illegible]


dash
plate phono

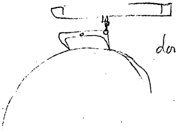

3 tools follg



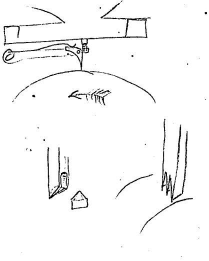
2nd Phono Caveat Oct 7 1888



To make both ends wave abrupt

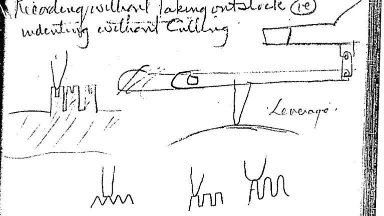


doublepoint Receiver



2nd Caveat Oct 1/88 TAE

Recording without taking out stock (i.e.) indenting without Cutting

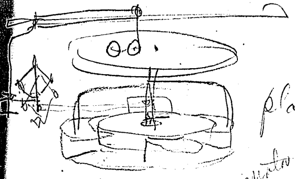


plastic Asphalt with Japan wax ~~or [illegible]~~ or Fatty acid Bitumenous softener coated with film of Gutta, Chicle or Balata or Gelatine or Molasses or flexible Colodion for indenting without Cutting –

2nd phono Caveat Oct 1/88

paper shells Coated with tin foil then dipped makes beautiful surface —

Heated paper to drive water off dipped thick is turned off true & on Redipping gives fine surface



Vary Speed by moving governor with traveller arm

Dynamo

2nd Caveat phono Oct 1/88

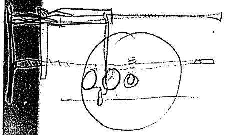
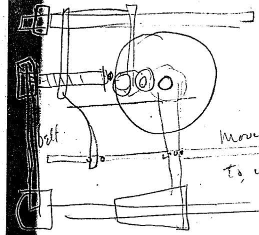


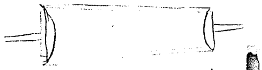
plate Machine

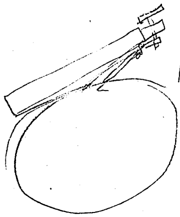

belt
Moving shifter

To increase speed as we approach center

2nd phono Caveat Oct 1/88

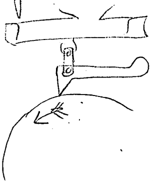
graphophone


Paper shell—

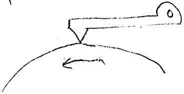


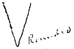
Knife on Trans
adjustable
instead of dia
as on Reg phono

2nd phono Caveat Oct 1/88
TAE

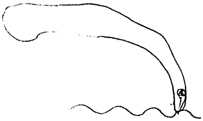


indenting without
cutting -





Oleate Lead cylinder
shell dipped & then
dipped in thin Linseed
oil & then Chlorinated
for indenting without Cutting



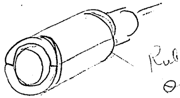
Leonardo di Vinci

[illegible]

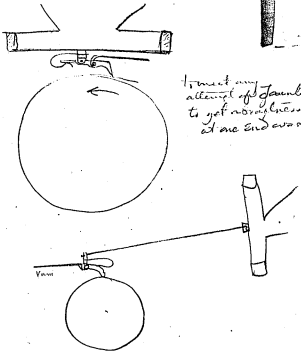
Lorenzo di Medici

2nd Phono Caveat Oct 1888

TAE



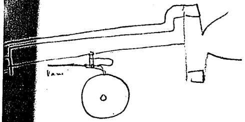
Rubber bands of plastic wax

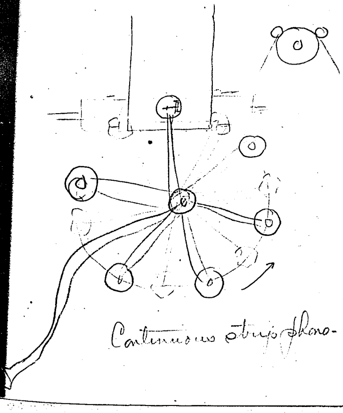


to meet any attempt of Tainter to get narrowness at one end or so

2nd Caveat phono — Oct 1 1888

TAE





Continuous strip phono-

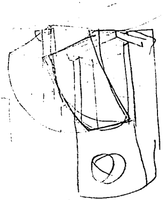
2nd phono Caveat — Oct 1 1888
TAE

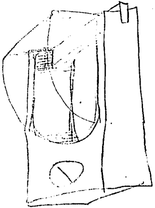
paper shells heated then dipped then turned off then redipped second dipping after turning gives smooth surface

Soft material such as Oleate lead Japan wax. Stearine pitch or fatty Oil pitch etc on paper turned off & then dipped in a Resin, in alcohol, Bitumen in Bisulphide Carbon or Benzol, Japan Varnish etc to give a polished Elastic film over soft material, then cut or indent without cutting

---

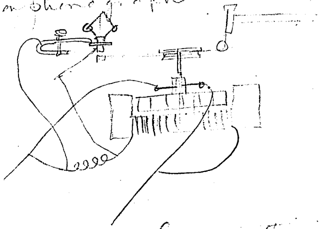
Asbestos for shells & then Coated.





2nd phono Caveat

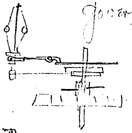
Spl Topaz or other hard gem having flat cleavage to use as bottom bearing in phonograph

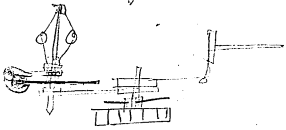


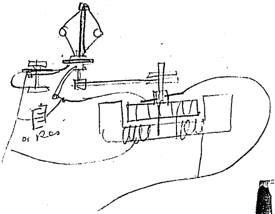
Governing by strengthening & weakening field

3rd Current Dynamo Oct 1 1888

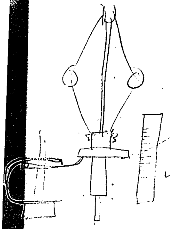
governing by friction.





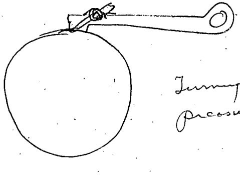


3rd Caveat Phono Oct 1 1888 TAE



gold or silver plated or plate button or platina.

index tells speed



Turning off Coal pressure

Oct 17 1888

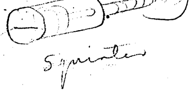
Making Cylinder - TAE

Oleate of Aluminum mixed with hard Oleates, ditto Stearic acid

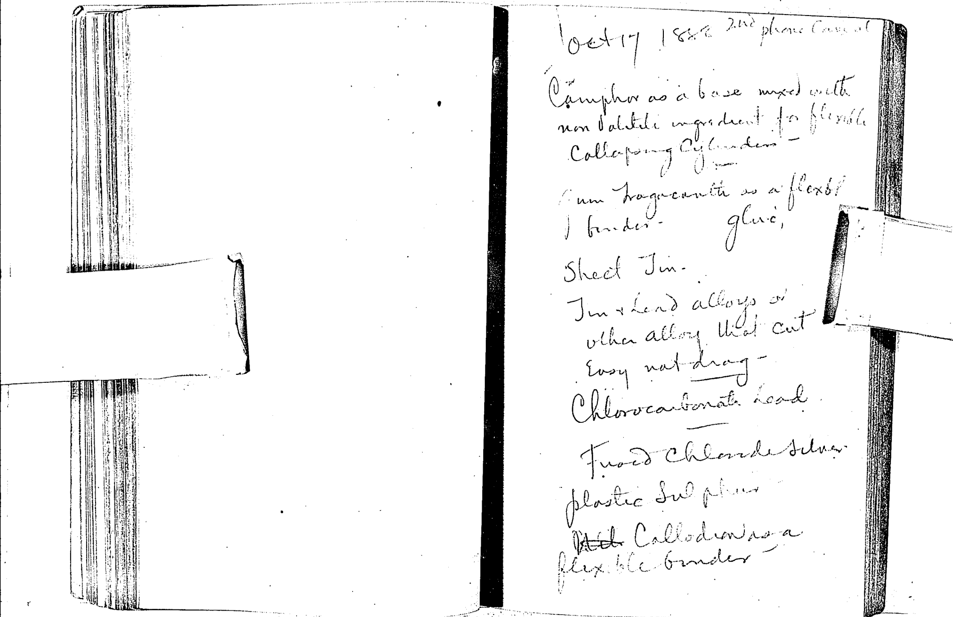
Chlorooleate of alumina also Magnesia

Gelatin mixed with albumen & various [illegible] [illegible] substances.

Finely divided powders like Kaoline, Trihydrate Alumina Etc mixed with Aluminum Magnesium oleates or Chlorooleates



Squirter



Oct 17 1888 2nd phono Caveat

Camphor as a base mixed with non Volatile ingredient for flexible Collapsing Cylinders –

Gum Tragacanth as a flexible binder – glue,

Sheet Tin –

Tin & Lead alloys or other alloy that cut Easy not drag –

Chlorocarbonate Lead

Fused Chloride Silver

plastic Sulphur

~~Pitch~~ Collodion as a flexible binder –

Oct 17 1888 2nd phono Caveat

T.A.E.

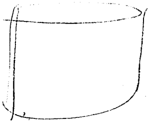
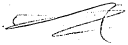
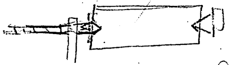


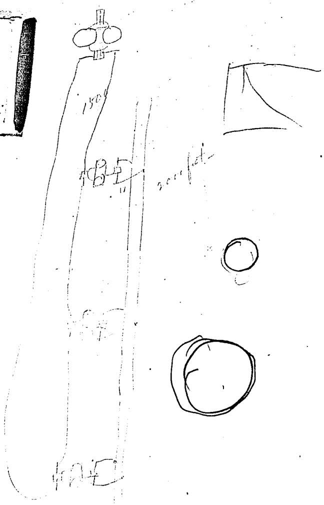
plate made
Solid Wax

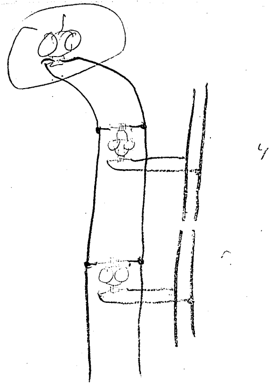


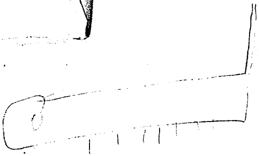
Solid Wax Cylinder

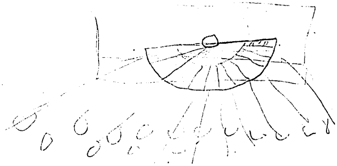


Sent off Caveat here

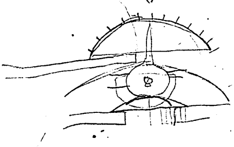

1500'
"
300 ft.

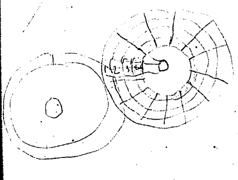

4

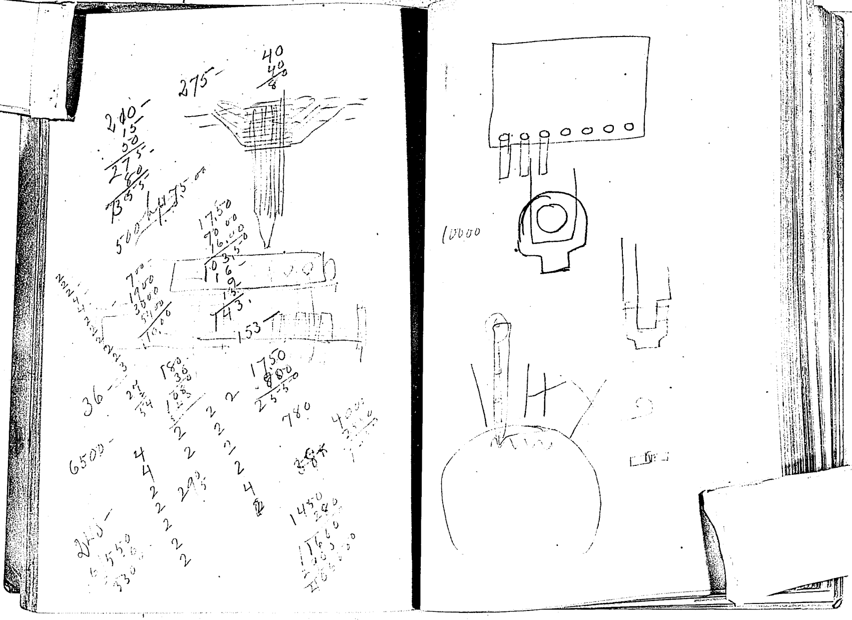


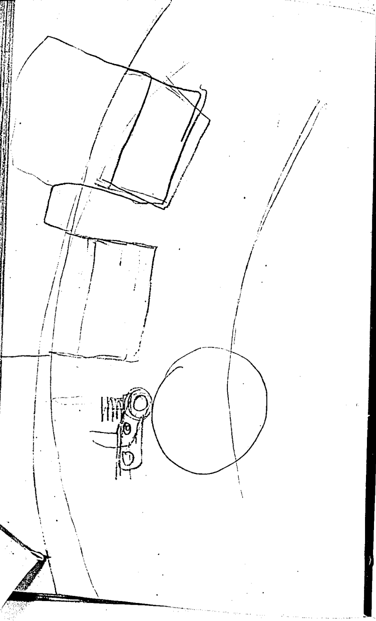


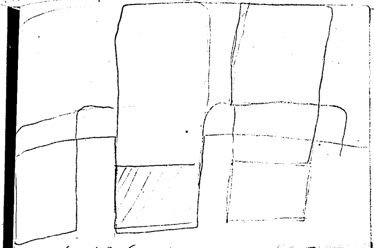
Typewriter Jany 13 '89
TAE






40
275
240
1750
780
6500
36
143
153
10000





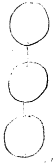
6000 -

32 -

24
3
72 -
732
144
16
2304
2304
3
6912
1728) 6912 (4.

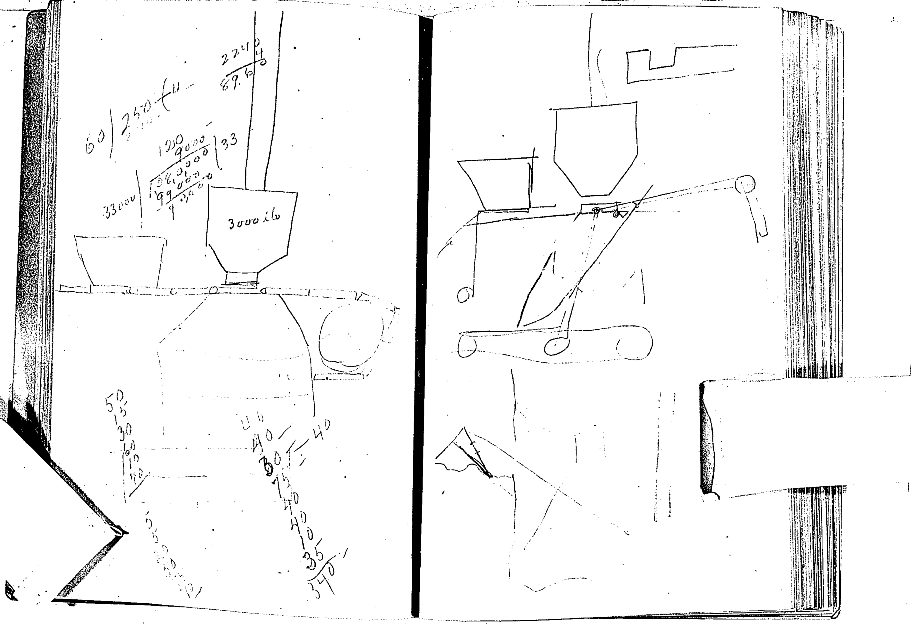
1240 -
6
100 -

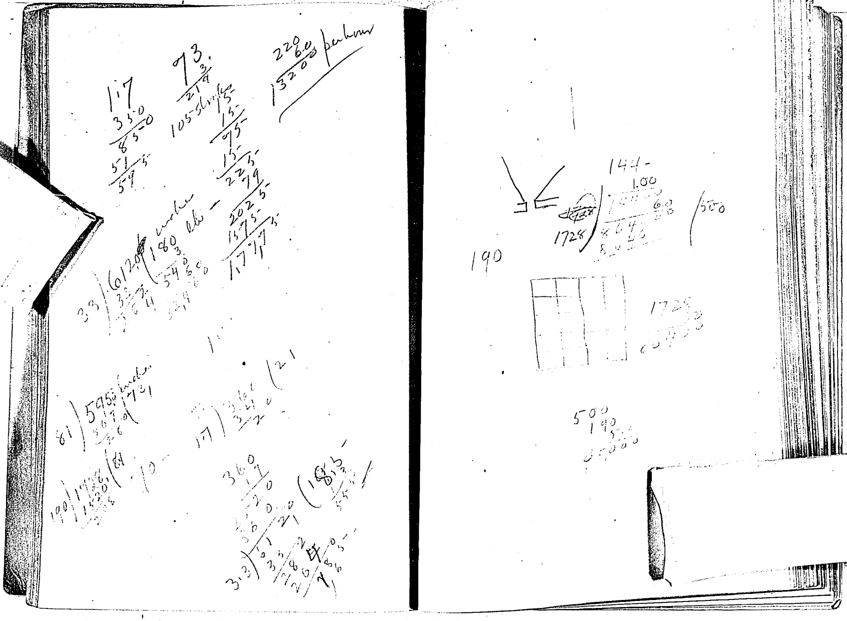
1200



50
30
25
34
60
40
16
30
595

75


3000 lb
60 | 2520
2240
4
89.60
1980
90000
33000 | 1080000 | 33
99
9
50
15
30
60
10
40
40
40
40
30
15
40
40
10
35
340



1.7
33.0
85.0
51
59 5

73.
3
219
105 shingles
15
95
15
223
79
202 5
1375
1777 5

220
6.0
13200 per hour

33) 6120 (180 inches
33
264
180 lbs
3
5460
2240

81) 5955 (inches
567 0
286
72 1

17) 3.60 (21
3.4
2

190) 1728 (81
1520
208

10

360
1
720
360
21

(18.3
3
55

3.3) 6 1
33
8 0 5
2 6

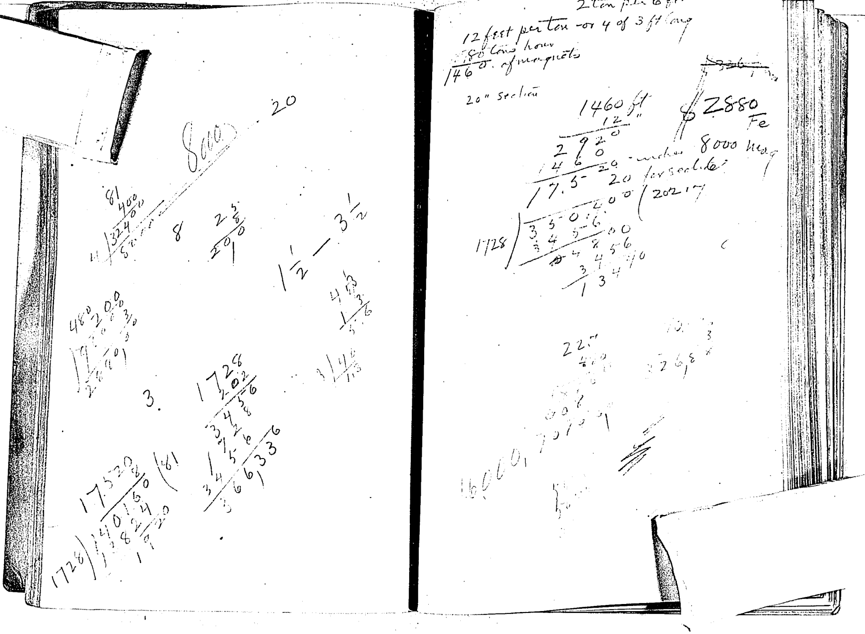
144
1.00
1728)
1728) 86400
6.0
8640
8

190

/500

1728
3
5184

500
190
5
95000


2 ton [illegible]

12 feet per ton - or 4 of 3 ft long

180 tons hour

1460. of magnets

20" section

1460 ft

12"

2920

1460

17.520

20 - inches 8000 mag

20 for section

(202 17

1728)

$ 2880 Fe

8000

20

8

1½ — 3½

3.

1728)

17.520

(81

16000

Madeleine

3333 Madeleine

3333 ~~Mina Miller~~

3333333 Mina Miller

3333333333 Mina Miller

3333333333 Mina Miller

3333333 Mina Miller

333333 Mina Miller

Mina

Mina

Madeleine

2100
8
20
40
8
16
93
27
7
30
222
20
750
588
96
41.4/9

3)52570
17526 2/3

52570.
.20
10514.00

3)52570
17526 2/3

6000
1450
24
7474
150
397
65
510
46
227
588
7457
275
9732

275

M. M 80

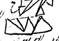
M Mina Miller

Mina Miller

52570

Mina Miller

Mina Miller



52570)9732,00(.18
52570
447500
420560
52570
9732
42838

9732,00(.22
85676
116440
85676
30764

Madeleine

Madeleine

Madeleine

Madeleine

Madeleine

Madeleine

Madeleine

Madeleine Edison

Madeleine Edison

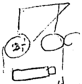
Madeleine Edison

2880
8

3 x 8 — ~~1728~~ 7 | 2374.0 (137
1728
6464
5 1
1276

240
2
480
40
240
2880
2870
13 20
116
1 2

1728 | 69



(40

14
400
5600
4 | 14

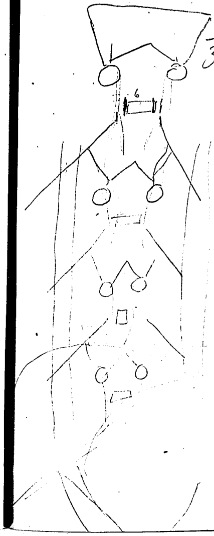
40

4800
1920 3
5760

300 feet

3 7

80
6
2 | 4



$5 76
1400
600
500
3076 —

3000 —

4000

2764

50) 138240 (2764
100
382
350
324
300
240

216090 (4320
50
21600.0

50
60
3000
72
6000

50) 21600
200
160
150
100
100

4320
140
172800
4320
504800

5(

72
60 inches
4320 (86

1728) 4320 (2.5
3456
864

20

50) 4320
400
320
300

6

140

86
60
5160 (3.
1728) 5184

1728

.32 - inches sec
60 " wide
1920 - inches per ~~sec~~
60
115200 per ~~hour~~ min sqr inches

50) 115200 (2304
100
152
150

115200
60
50) 6912000 (138240
50
191
150
412
400
120
100
200

6912000

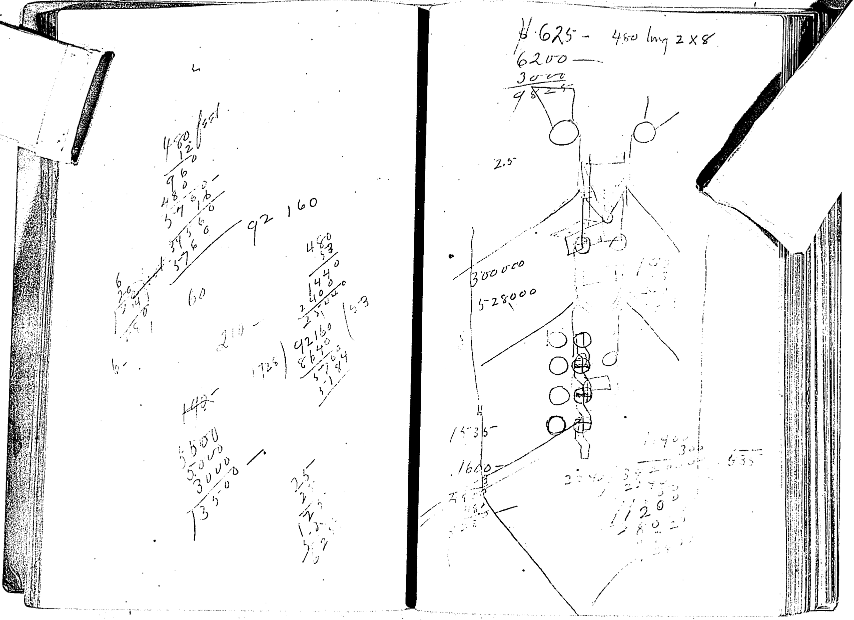
1728) 138240 (80
13824

140
50 inch - .500 - 172.8

100 - 250
200 125
400 62.5
500 - 31.25
1000 - 20

24 times as fast.

36
12



480 feet
12
960
480
5760
16
34560
5760
92 160

60

210 -

480
53
1440
2400
25440
53

1728) 92160
8640
5760
5184

~~140~~

5500
5000
3000
13500

25

$625 - 480 lng 2 x 8
6200
3000
9825

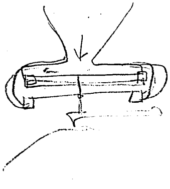
2.5

300000
528000

1535

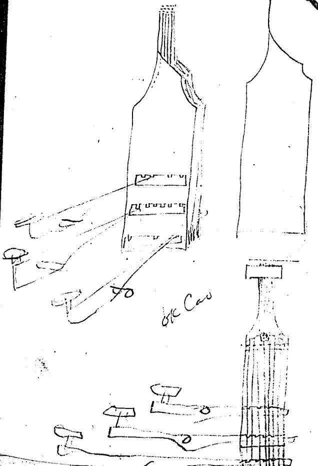
1600

1120



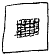
Typewriter & phonogh Caveat No 1

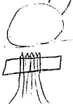
Jany 27 .89.

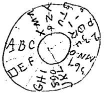


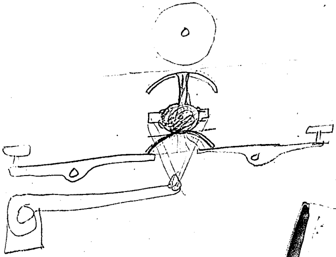
OK Cav

Caveat. P+TW – 1st
27 Jany 89

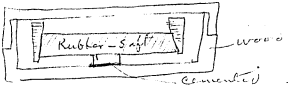


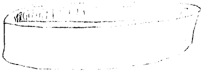

perforating
Typewriter


ABC
DEF
GHI
Top View

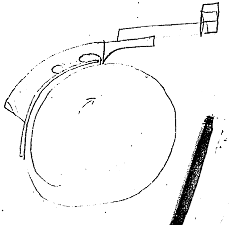


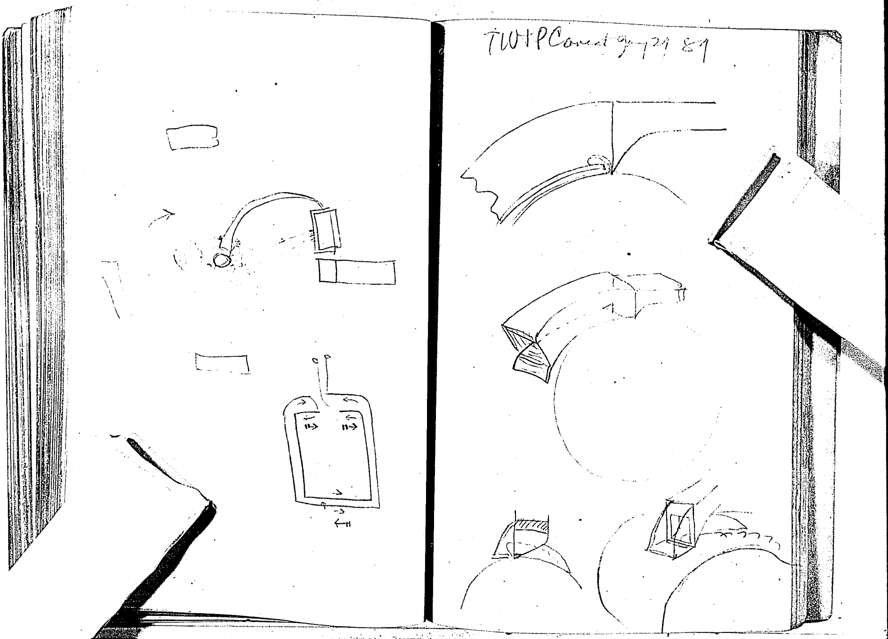
Caveat 1st TWTP Jany 27 89 —

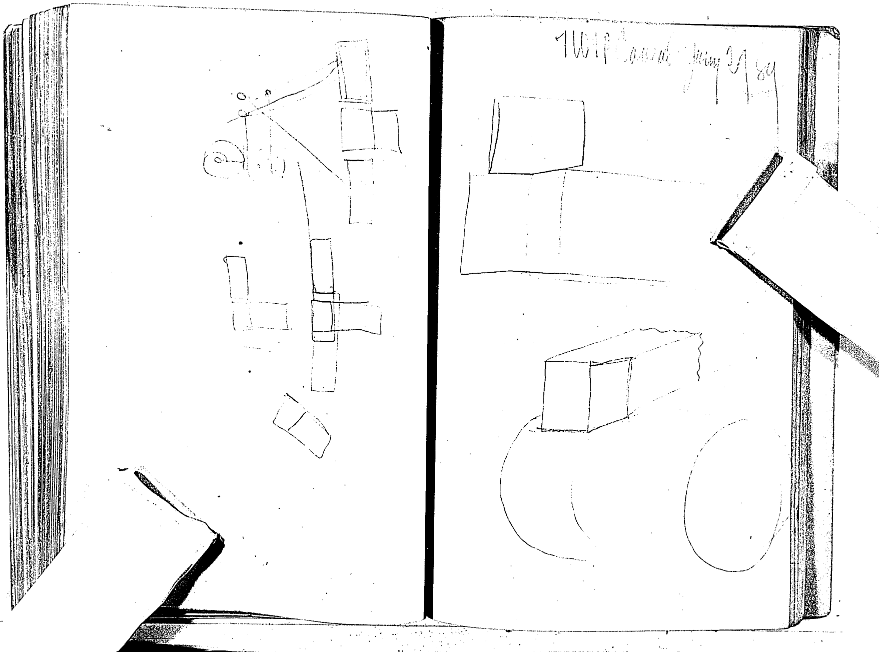

Rubber – Soft
wood
cemented

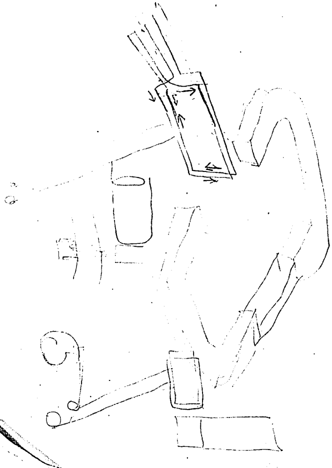


Marking




TW+P Conceal 9-29 89


TWTP Board May 29/84

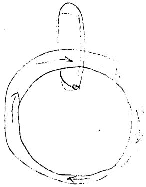


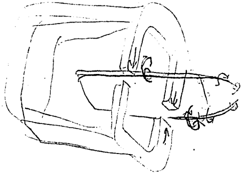
JWP Caveat Jany 27 89

Solder Saphire to holder -
cement it -
Iridosmine
Manganese steel
Case hardened Steel,

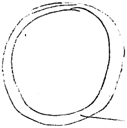
phos bronze -
let pass [illegible]
only one way

Copper Silver or brass gold
plated bottom to govr
Control piece =
shunted =



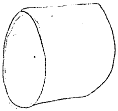


JW+PCar Jany 27 89



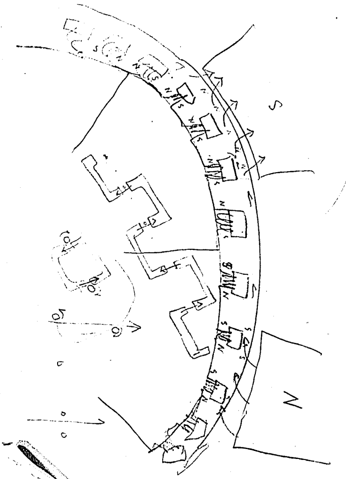
Making

Card board wound over with soft thread then dipped in No 2 material



Thick paper Coated with Rubber then dipped —

also with Very soft Ozocerite, softened Crude Pet + No 2 dipped over it

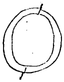


See partly finished one of my
Caveat in desk drawer

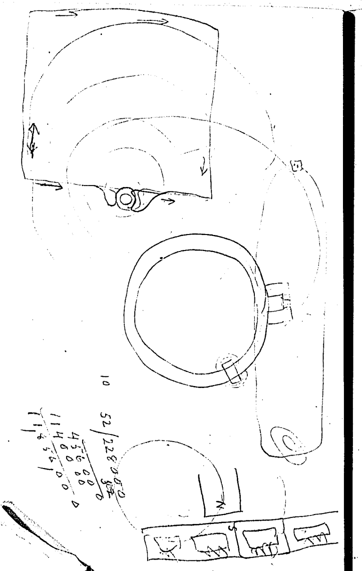
Caveat TWP. Aug 27, 89

square thread wax coated & wound
in groove 50 to inch & screw 50 to inch
threaded [illegible] for [illegible] purposes

Small Recorder on side of Rep
for duplicating
Grooved cylinder with several
thicknesses tin foil, same
one for filing [illegible]



Moved polished [illegible]
plate with tingle
then pour in wax
or No 2 or make
Japan & have groove
in & free in open
moved & thus leave
a foil over wax
Ready to be backed on



10

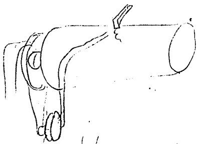
52 / 2280050

4560000

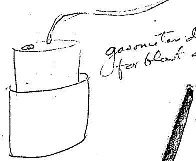
1140000

11854000

T.W&P Car Jany 27 89

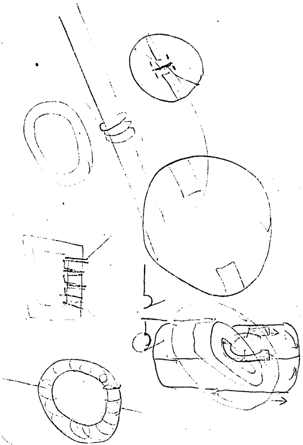


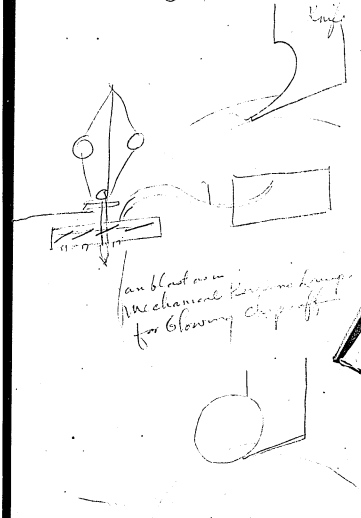
blast air to blow off chips



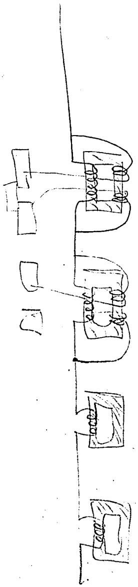
gasometer device for blast air

TWTP Jan 27. 89

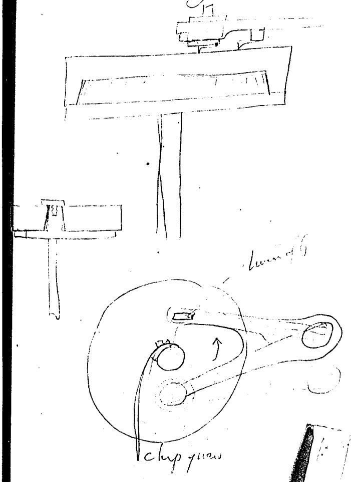




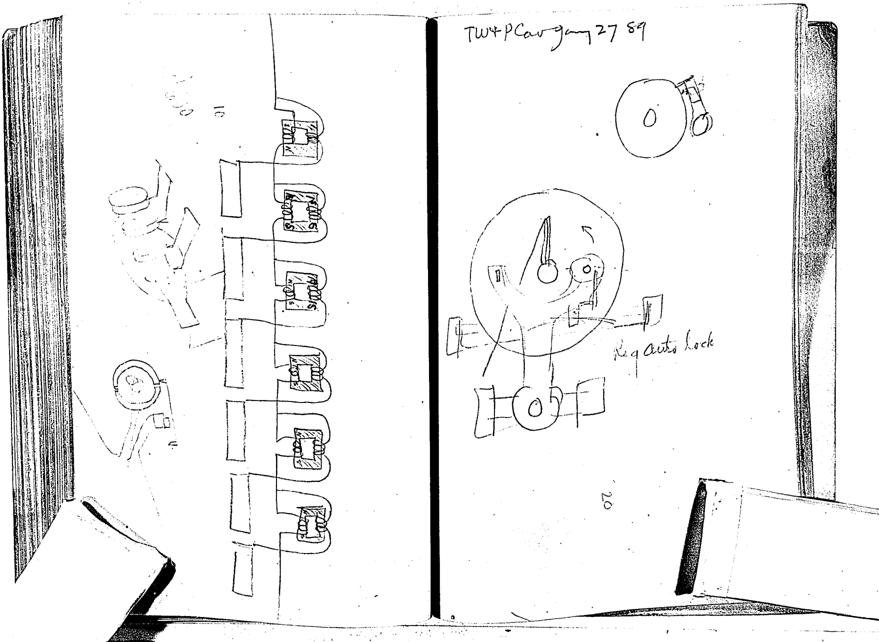
fan blast on a
mechanical [illegible] lump
for blowing chips off



TWTP Cav - Jan 27, 89


lumen of G
clip guns

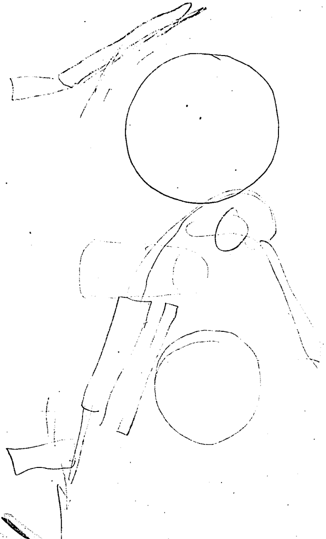
TW+P Car gang 27 89



Reg Auto lock

10

20



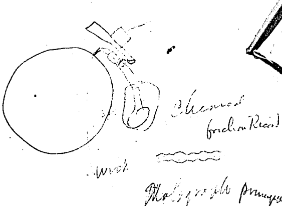
TWP Groging 27, 89

a making Cylinder
of soft material
which before making
is Coated with an
elastic substance or
rubber this is dissolved
off — also as above
but before making immersed
in a liquid which causes
the material to become
Elastic by chemical
change in this case be
the original material
of hard material
Chlorine is a good
agent for this conversion

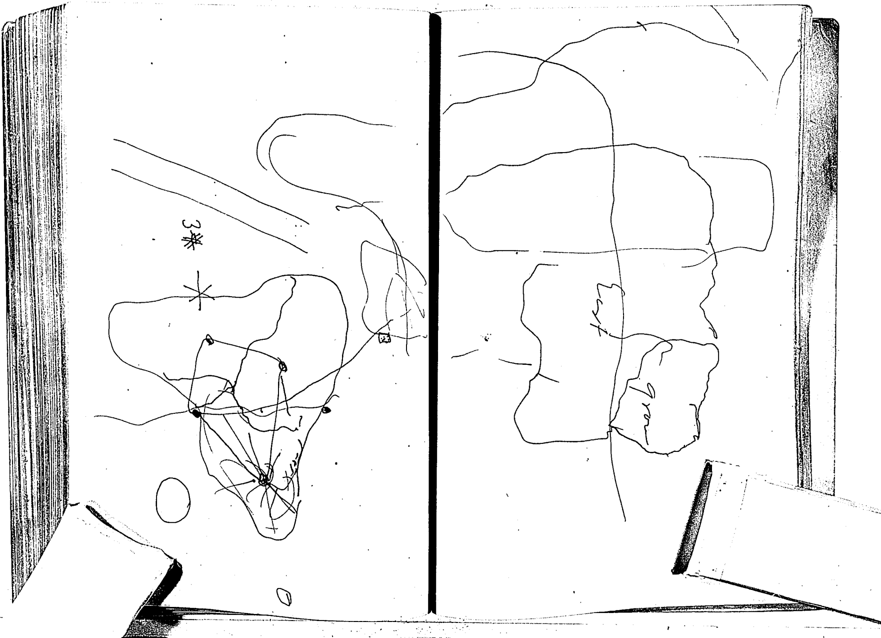
TWTP Cao Jany 27/84

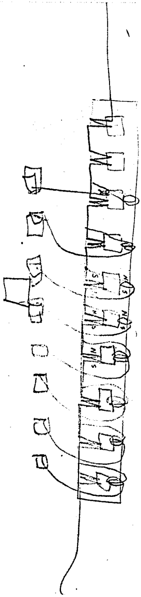
paper shell [illegible]
Asphalt, then dipped
No 2 - wrapped paper
& packed box with sp [illegible]
sub or Cork [illegible]

Wind made [illegible]
pour, [illegible]
great [illegible]
blk by [illegible]

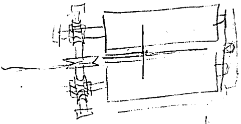

Chemical
friction Reed
wick

Photograph primary
Reproduced

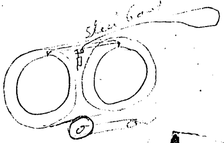

3
text
gray

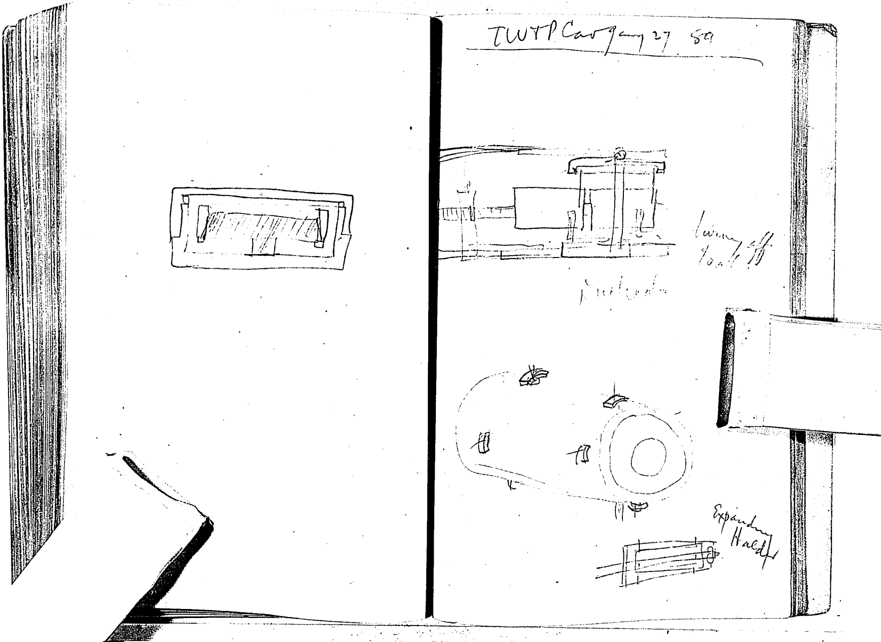


TW+P Car Jany 27/89



Duplicator –
Work



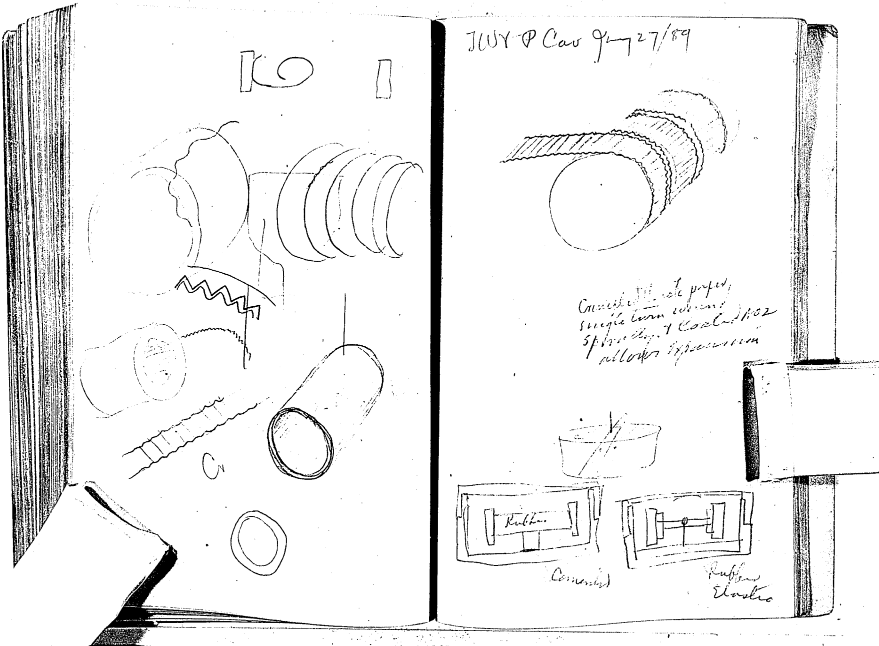


TWTP Car January 27 89

Lowering off
Load off

[illegible]

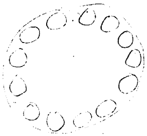
Expanding
Holder



JWY P Cav Jan 27/89

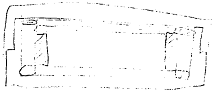
Crucible TTT [illegible] paper,
single turn [illegible]
Spiraling 7 Coated 1102
allows expansion

Rubber
Cemented
Rubber
Elastic



TWTP Caogu 27 '89

Mailing



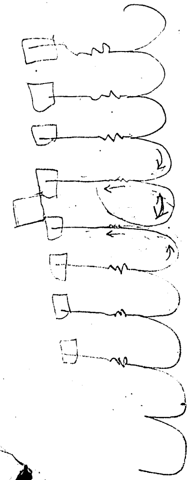
[illegible] [illegible] with Parker [illegible]

3 pct sodium in
Zinc with Na
10 Sodium [illegible]
Zinc for batteries.

Gold

Zinc

Shaking box with gold
got by [illegible] 1 pct
Sodium [illegible]
gold bar local [illegible]
sinks into Zinc



Caveat Jany 27 89

Separation pyrohatite from
pyrite, (E) process for
separating all Monosulphide
from Compounds do from DiSulph
ditto = Nickeliferous
pyrohatite from Calcopyrite

Coating [illegible] copper plates by
oxide, put on by [illegible] + by
Current of [illegible] reduced
by Hydrogen ground +
Fine [illegible] used or
Hg Electrode used with
Oxide carrying metal
on reduction to amalgamate

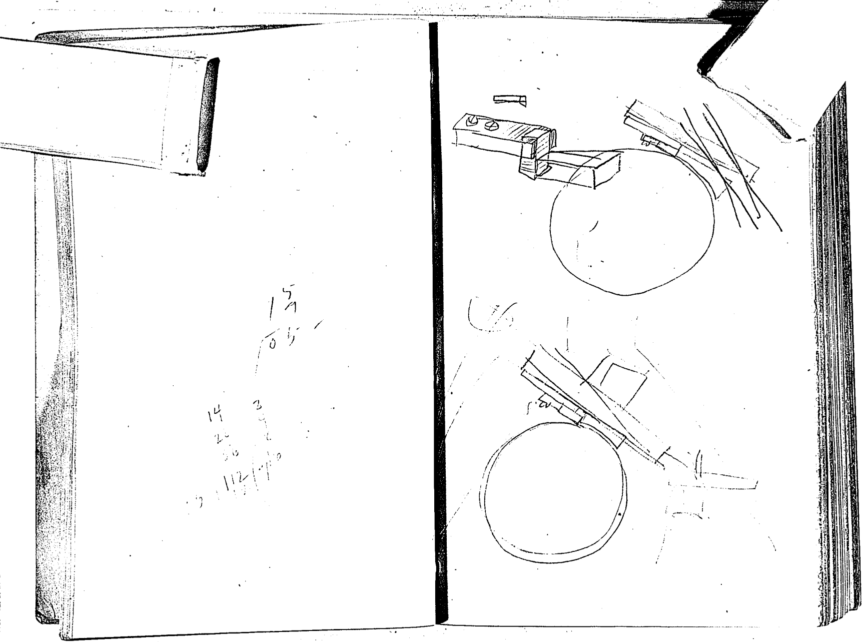
Caveat [illegible] 27/78

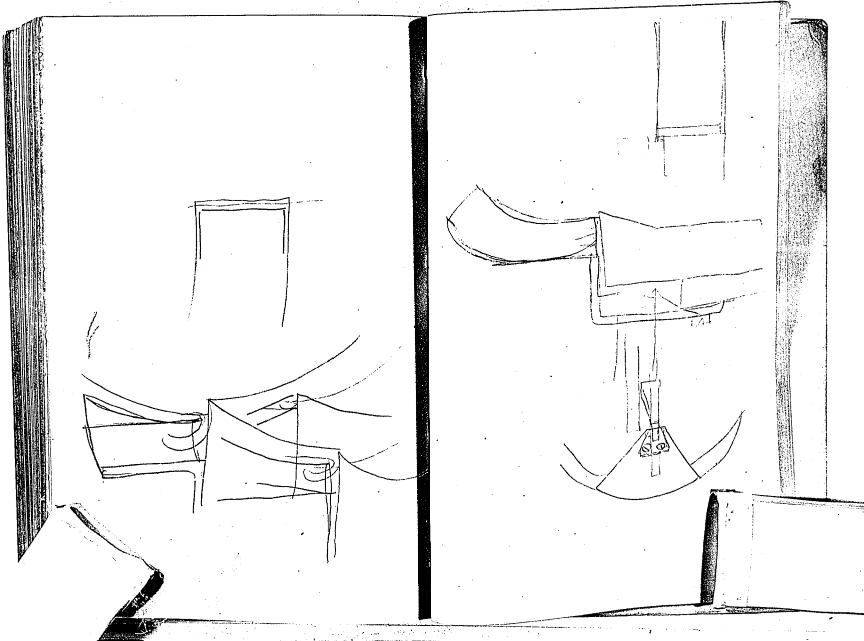
Filaments of Carbon
placed in tube & Chl
ammonium put in & Chl Tungsten
or titanium passed deposit
Thin film of Titanium or
Tungsten film -

Squirted filaments of
Magnesium & Aluminum
together or separate
with Zirconium Dried &
placed in Tube &
Osmium, Nitrate of
Titanium or Tungsten Also
deposited
Silicon Etc
for Elect Lamps

all Diagrams of [illegible]
Contest 9 by 27
made on foolscap
for Dyck & Seiler

1000	1500	2000	2500	3000	3500	4000	4500	5000	5500	6000	7000	8000	9000	10000


15
0.5
14
3
112



[illegible]

1000	1500	2000	2500	3000	3500	4000
𝍸𝍸	𝍸𝍸	𝍸𝍸	𝍸||||	𝍸𝍸	𝍸||	𝍸|.
𝍸𝍸	𝍸𝍸	𝍸𝍸𝍸		𝍸||		
𝍸𝍸	𝍸𝍸	𝍸||||	9	17	7	5
𝍸𝍸	𝍸	35				
𝍸𝍸	35	70000	22500	50000	24500	20000
𝍸𝍸						
𝍸||||	52000					
70.						
90000						

1500
35
7500
4500
52500

27000	~~4873~~	~~4672~~	~~7800~~	8000
~~9000~~	~~6480~~	~~5639~~	~~11600~~	6000
~~8000~~	~~11873~~	~~17000~~	~~10600~~	~~11000~~
~~6700~~	~~11437~~	~~9544~~	~~9000~~	8000
503000	~~5167~~	~~8975~~	~~19000~~	~~13000~~
~~4200~~	~~7847~~	~~10927~~	8000	
~~4400~~	~~7000~~	~~29250~~	6000	
			8000	

5000	6000	7000	8000	9000	10000	11000
𝍸||	|||	|	||||	|||	||||	|||
7	3	1	4	3	4	3
35000	18000	7000	32000	27000	40000	33000

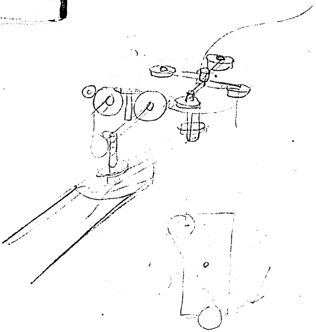
13000
|
1
13000

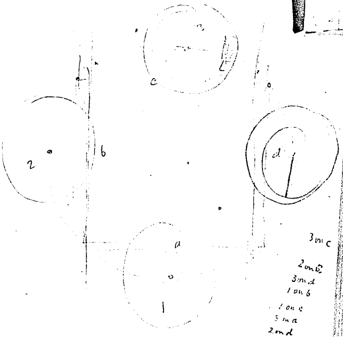
17000
19000) — 36000
27000
29000
29250
503000.

70,000
52000
70000
22500
50000
24500
20000
35000
14000
7000
32000
27000
40000
33000
13000
36000
550,000

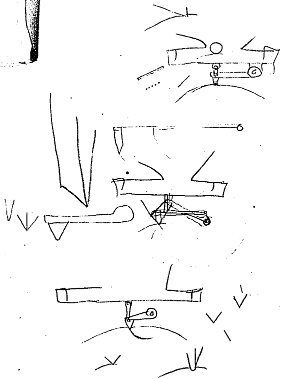
1000	1500	2000	2500	3000	3500	4000	4500	5000	6000	7000	8000	9000	10000
𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸	𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸	𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸	𝍸 |||| 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸	𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸	𝍸 𝍸 𝍸 𝍸 𝍸 𝍸	𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸				|		𝍸	

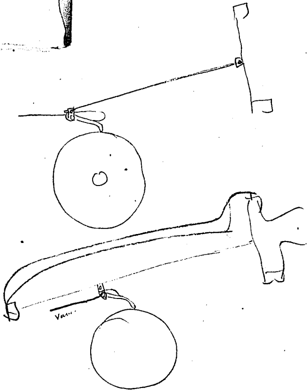
96000
19000
22000
17000
21000
20000

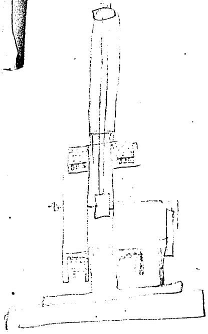


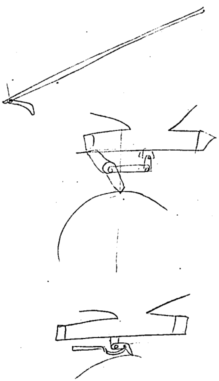


3 on c
2 on b
3 on d
1 on b
1 on c
3 on a
2 on d
3 on b
1 on d
2 on c




Vam

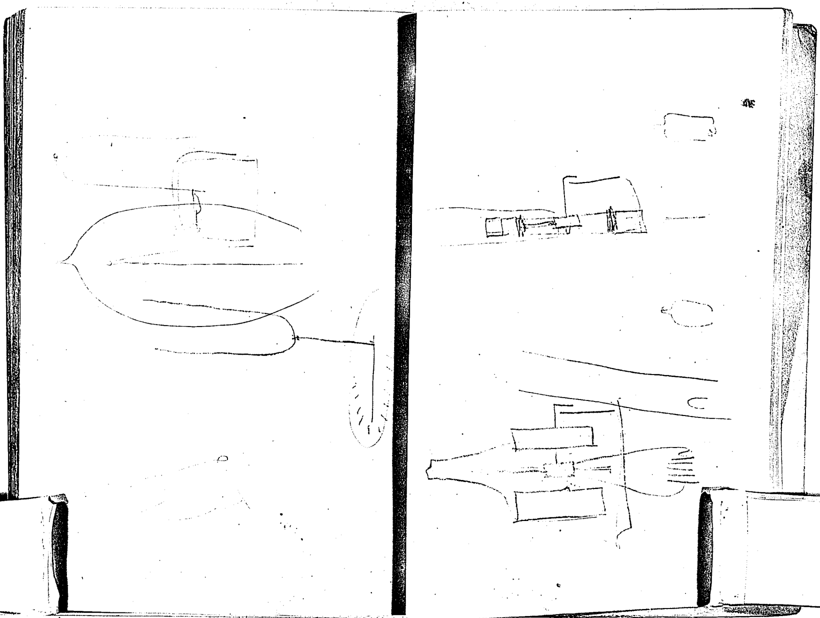


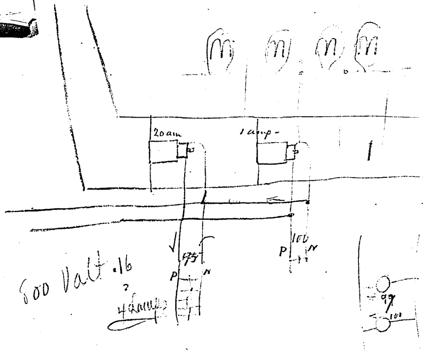


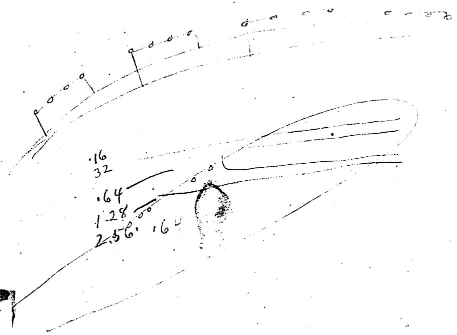
.25 [illegible]

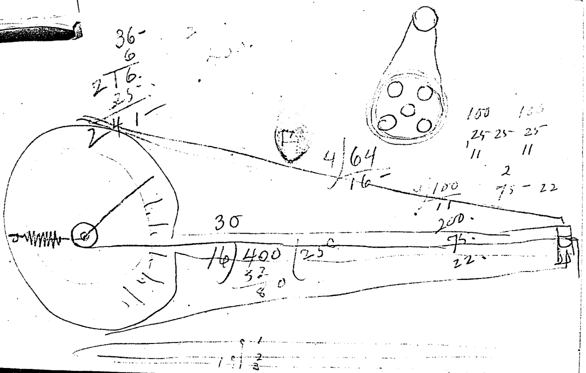
6 cells

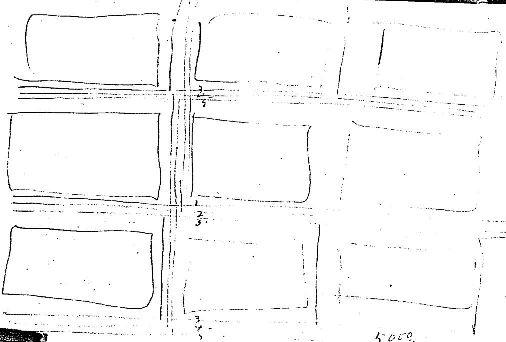
75
6
4.20




20 am
1 amp-
100
P
N
975
P
N
99
100
600 Volt .16
?
4 amps


.16
32
.64
1.28
2.56
.164


36-
6
216
25
100 100
25-25- 25
11 11
2
75 - 22
4)64
16
4)100
11
200.
75.
22.
30
16)400
32
80
25
1
2
3



5000
8
40000

75000
16

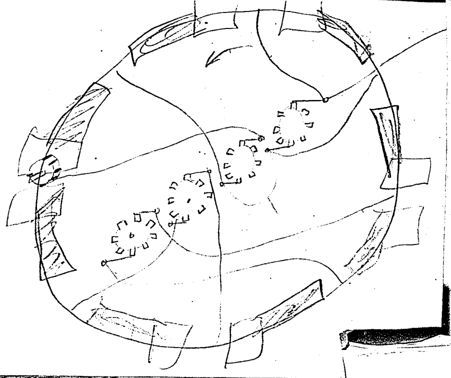
4 | 75
19

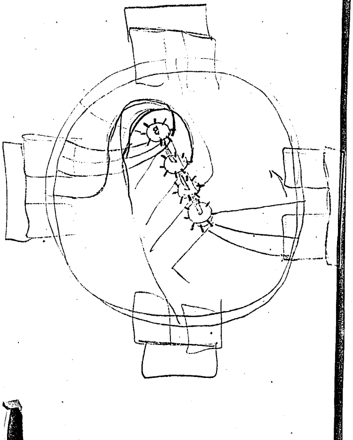
25000
16

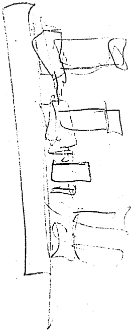
17000
16
02000
17000

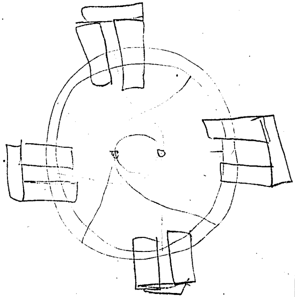
15000
25000
30

30001









Name of chemical	Tromsdorf		Merck		Cooper		Powers + Weightman		Eimer + Amend		English of QTG	
	lb	oz	lb	oz	lb	oz	lb	oz	lb	oz	lb	oz
Acetone pure	K 75		K 75		1.25							
Acetamid			K 4.25		K 360							
Acetal			K 2.25									
Acetone Com			K 50									
Acetic Acid 1.040 Com 30pct												
" Pure												
" CP 1.062 50pct												
" CP												
Anhydrous Acetic Acid –												
Antimonic Acid												
Antimonious "												
Arsenic dry pure			K 80									
Com Arsenious Acid			K 82									
Pure Arsenious Acid			K 82									
Asparagic Acid			D 4.50									
Urine Benzoic Acid												
" gum "												
"Anhydrous												

30

1600
20
32000

Franga

2½ — 2½

175 —

125 —

75 —

400 —

80 —

25 — 300 —

[ITEM FOUND IN BOOK]

From [illegible] 880305

Gladstone -

Please drop your present Experiments for a while and go on the following - I want to get a better Phonograph Cylinder, One that will be hard like Carnauba Wax but not so brittle, one that the tool in the phonograph will turn off polished & take a Continuous Chip or partially so & ~~[illegible]~~ the Transmitter or rather recording Knife will cut a clean shining groove - I will give you a piece as a sample - I find that while Mr Payne has obtained a cylinder which is perfect it is formed of materials which cause it to act as an Electrophorus, The turning off tool Electrifies the cylinder & chip & they are electrically attracted to & stick to the Cylinder & when blown off are attracted & stick to everything -

The first base I want you to go on is White glue This can be melted with water by suspending a dish in hot water. As softeners of Glue use the following in various proportions Glucose — Molasses — Caramel, Grape Sugar Glycerine, possibly some of the thick fluid Extracts from Herbs - we have them all -

---

If you find even the smallest proportion of these soften it too much add the following hardeners & then add or not as may be necessary some of the softeners, The object of the softeners Is to cause the Glue to be continuously soft after the same has been cooled from the hot pour The object of the hardeners is to diminish the tenacity of the glue so the Cutting tool will take a chip easily & not tear

[ITEM FOUND IN BOOK]

You will notice that the softeners are bodies that never get hard and are uncrystaline bodies & all soluable in water -

The hardeners may be any brittle gum or resin soluable in water among which may be mentined

Ordinary Gum Dextrin, Gum arabic. Logwood Extract. Albumen - Picric acid - Jalap Resin, aniline Violet & other aniline Colors and a host of uncrystalizable substances soluable in water which give brittle mass on Evaporation of water - Annatto. Ammonio-Citrate Iron Boiled Starch -

2nd Base

Use Gum Arabic as a base and following as softeners, Caramel, Albumen - glucose. Glycerine, Chloride Zinc, Phosphoric acid - Glue or Gelatin, Boric acid -. Irish Moss - Aniline Colors [illegible] Lactic acid · Cyanide Potassium

Repeat with Gum Dextrin as a base